CLAIMS

1. A poxviral particle having a targeted infection specificity towards target cells wherein said particle infects preferably said target cells and wherein said specificity is conferred by at least one heterologous ligand moiety which is localized at the surface of said poxviral particle and which is capable of binding an anti-ligand molecule localized at the surface of said target cells, with the proviso that when said poxviral particle is an EEV vaccinia virus particle said ligand is not an antibody directed to ErbB-2.

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2. The poxviral particle of claim 1, wherein said poxviral particle is a vaccinia virus, canarypox, fowlpox, cowpox, entomopox, monkey pox, swine pox or pinguin pox particle.

3. The poxviral particle of claim 1 or 2, wherein said vaccinia virus is selected from the group consisting of Copenhagen, Wyeth and Ankara modified (MVA) strains.

4. The poxviral particle of any of claims 1 to 3, wherein said poxviral particle is an IMV.

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5. The poxviral particle of any of claims 1 to 4, wherein said target cells are tumoral cells and said heterologous ligand moiety is capable of binding a tumor-specific antigen, a cellular protein differentially or overexpressed onto said tumoral cells or a gene product of a cancer-associated virus.

6. The poxviral particle of any of claims 1 to 5, wherein said heterologous ligand moiety is a fragment of an antibody capable of recognizing and binding to the MUC-1 antigen.

7. The poxviral particle of claim 6, wherein said heterologous ligand moiety is the scFv fragment of the SM3 monoclonal antibody.

8. The poxviral particle of claim 1, wherein said heterologous ligand moiety is a polypeptide and wherein it is part of a chimeric protein including said heterologous ligand moiety and a poxviral polypeptide.

9. The poxviral particle of claim 8, wherein said poxviral particle is an IMV and wherein said poxviral polypeptide is selected from the group consisting of the expression products of the A27L, L1R, A14L, A17L, D8L and H3L genes.

10. The poxviral particle of claim 8 or 9, wherein said heterologous ligand moiety is fused to the N-terminus of the expression product of the A27L gene.

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11. The poxviral particle of any of claims 1 to 10 , wherein said heterologous ligand moiety comprises a signal peptide facilitating its insertion in the envelope of said poxviral particle.

12. The poxviral particle of claim 11, wherein said signal peptide allows the translocation of said heterologous ligand moiety in the trans-Golgi network.

13. The poxviral particle of claim12, wherein said signal peptide is derived from the human trans-Golgi network glycoprotein TGN51.

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14. The poxviral particle of any of claims 1 to 13, wherein said poxviral particle comprises comprises at least a nucleic acid of interest.

15. The poxviral particle of claim 14, wherein said nucleic acid of interest is a suicide gene.

16. A vector comprising at least one nucleotide sequence encoding a chimeric protein comprising (i) at least an heterologous ligand moiety as defined in any of claims 1 and 5 to 8, and (ii) all or part of an homologous viral polypeptide naturally localized at the surface of a poxviral particle.

17. The vector of claim 16 wherein said homologous viral polypeptide is as defined in claim 9.

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18. A composition comprising at least one poxviral particle of any of claims 1 to 15 or at least one vector of claim 16 or 17 and a pharmaceutically acceptable vehicle.

19. Use of a poxviral particle of any of claims 1 to 15 or of a vector of claim 16 or 17 for the preparation of a drug intended for the treatment of a human or animal organism by gene therapy.

20. A method for the purification of a poxviral particle of any of claims 1 to 15 from a viral preparation containing both said poxviral particle and a wild type poxviral particle, comprising the steps of binding said viral preparation to a solid support

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coated with an antiligand molecule capable of binding said heterologous ligand moiety and recovering said poxviral particle.

21. The method according to claim 20, wherein said binding step is performed by surface plasmon resonance on a dextran support.

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22. The method according to claim 20 or 21, further comprising the step of infecting a permissive cell with said recovered poxviral particle.

23. The method according to claim 22, wherein said infection step is performed in the presence of EDTA